



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/081,971	02/20/2002	Shunpei Yamazaki	07977-303001	2205

26171 7590 07/23/2007  
FISH & RICHARDSON P.C.  
P.O. BOX 1022  
MINNEAPOLIS, MN 55440-1022

EXAMINER
----------

MULPURI, SAVITRI

ART UNIT	PAPER NUMBER
----------	--------------

2812

MAIL DATE	DELIVERY MODE
-----------	---------------

07/23/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

**Application No.**

10/081,971

**Applicant(s)**

YAMAZAKI ET AL.

**Examiner**

Savitri Mulpuri

**Art Unit**

2812

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 July 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-11, 19, 20, 24 and 25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 20 and 51-54 is/are allowed.
- 6) ☒ Claim(s) 1-11, 19, 24-50 and 55-64 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>7/12/2007</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 7/12/2007 has been entered.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-11, 19, 24-49, 55-64 are rejected under 35 U.S.C. 102(e) as being Jung et al by (US 2002/0018912 A).

Jung et al teaches a method of depositing a layer for electroluminescent device: Jung teaches successively forming a first function region comprising hole transportation layer of first organic compound on an electrode, organic emission layer and organic electron transportation layer. Jung et al specifically teaches simultaneous irradiation of

ultraviolet light generated by lamp during deposition, wherein ultraviolet light having wavelength in the range of 100-200nm or 254 nm to 320 nm to result compact film formation (fig.2 and related description and para0062). Jung et al teaches direction of irradiation is from the same direction of evaporating of the first and second organic compound, wherein evaporation source from which the first organic compound is evaporated is different from a evaporation source from which the second organic compound is evaporated, and wherein first organic compound source is evaporated from first evaporation source and second organic compound is evaporated from second evaporation source (see fig. 1 and related description). Jung also discloses light source, first evaporation source and second evaporation source are all in same plane (see para0036-0039, para0077. Jung et al clearly discloses simultaneous deposition of more than two organic compounds in vacuum deposition chamber, which inherently results mixed region of first organic compound and second organic compound, which is essential for making efficient electroluminescent devices giving emission at desired wave lengths (see para 0036 - para 0039, para0076-0077 and claim 9).

Jung et al specifically teach forming an organic thin film by simultaneous deposition of organic compound A and organic compound B and simultaneous irradiation by means of vacuum deposition (fig.1), wherein the organic thin film prepared by polymerization of the compound formula 1 having at least one acetylene group. Jung et al also teach forming electroluminescent device can have hole transportation layer, emission layer and electron transport layer (fig2), wherein transportation layer or emission layer formed by depositing at least one compound in formula 1, which suggest

that transportation layer or emission layer can have at least one organic compound A or B or together, which satisfy the instant claimed process.

With respect to new claims 55-57,61 Jung et al inherently discloses the mixed region through irradiation with to form a compacted mixed region comprising the first organic compound and second organic compound because uses UV irradiation and using the first compound and second compound to form mixed region. Jung et al, teaches forming organic electroluminescent device by depositing similar compounds such as  $Alq_3$  to form emission layer or transport layer (para 0026, 0076) as similar to the instant invention( page, 35, line 9) . Jung et al teaches ultraviolet irradiations gives curing (polymerization), which is similar to the instant invention. Unless the organic compounds are different in the instant invention from the invention of Jung et al, the result i.e., forming mixed region is same in both Jung et al and instant invention because both Jung et al and instant invention uses first and second organic compounds along with UV radiation for forming hole transpiration layer and emission layer.

Also, in forming electroluminescent organic devices, the emission layer is a grading organic layer with mixed organic compounds, which are used to form hole transportation layer and electron transportation layer, see for evidence Fig. 1 layers 29, 31, 30 in So et al (US 5, 925,980).

With respect to claims 58-60, 62-64 Jung et al teaches the wavelength of the UV radiation is 254 nm - 300 nm. (para 0062)

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Yamazaki et al teaches chemical vapor deposition of silicon-based materials by using light.

### ***Response to Arguments***

Applicant's remarks filed on 7/12/2007 have been noted. Applicant argue that Jung does not describe or suggest (1) mixed region comprising a mixture of first and second organic compounds during irradiation with light in the deposition chamber, but only teaches formation polymer film by simultaneous deposition of two or more organic compounds. However, as agreed by applicant Jung uses simultaneous deposition of two or more organic compounds by using UV light irradiation and it is irrelevant whether the organic compound molecules are giant or small molecule to form polymer layer or small molecular layers respectively. Since claims are limited to mixed region comprising first organic compound and second organic compound, Jung teaches mixed region with simultaneous deposition of first and second organic compounds by using UV light irradiation for making organic electroluminescent layers and it is inherent in the invention of Jung et al results mixed region of first organic compound and second organic compound (see para 0036, last three lines).

So is shown to see how intermixed region is helpful to improve the efficiency of the OLED. So teaches intermixed region between hole transport and electron transport layer result smooth interface and improves the efficiency of the device. So is merely

applied to show the advantage of intermixed region for the device . So is shown as evidentiary document how the emission layer is a grading organic layer with mixed organic compounds, which are used to form hole transportation layer and electron transportation layer, see for evidence Fig. 1 layers 29, 31, 30 in So et al (US 5, 925,980).

Applicant argues that (2) Jung does not teach activating organic compound molecules, thereby forming compact organic film as mentioned in the instant invention (para 0063-0063. Since Jung teaches forming mixed region with simultaneous deposition of first and second organic compounds by irradiation of laser with wavelength 254-300 nm, Jung inherently forms compact organic film because similar materials are treated with similar process in both instant invention and Jung et al.

Claims 20, 51-54 are allowed.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Savitri Mulpuri whose telephone number is 571-272-1677. The examiner can normally be reached on Mon-Fri from 8 a.m. to 4.30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael, Lebentritt, can be reached on 571-272-1873 The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Savitri Mulpuri  
Primary Examiner  
Art Unit 2812